

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of processing raw seismic data traces obtained during a seismic survey to match a seismic event in a first set of raw seismic data traces with a seismic event in a second set of raw seismic data traces, the method comprising: a) identifying ~~the~~ a value of a first parameter associated with ~~an~~ a seismic event in a first set of raw seismic data traces; b) obtaining, using at least one look-up table, ~~the~~ a value of a second parameter, the second parameter being associated with a corresponding seismic event in a second set of raw seismic data traces; and, c) using the values of the first and second parameters to match the seismic event in the first set of raw seismic data traces with the seismic event in the second set of raw seismic data traces and thus provide knowledge of one or more subterranean geological structures.
2. (original) A method as claimed in claim 1 and comprising obtaining the value of the second parameter using a first look-up table of the first parameter against at least one survey parameter and a second look-up table of the second parameter against the at least one survey parameter.
3. (original) A method as claimed in claim 2 wherein step (b) comprises: b1) obtaining, using the first look-up table, the value of the survey parameter, or a respective value of each survey parameter, corresponding to the value of the first parameter associated with the event in the first set of seismic data; and b2) obtaining, using the second look-up table, the value of the second parameter corresponding to the value of the survey parameter, or the respective values of each survey parameter, determined in step (b1).
4. (previously presented) A method as claimed in claim 3 and further comprising defining a

third look-up table of a third parameter against the at least one survey parameter.

5. (previously presented) A method as claimed in claim 4 and further comprising obtaining, using the third look-up table, the value of the third parameter corresponding to the value of the survey parameter, or the respective values of each survey parameter, determined in step (b1).

6. (previously presented) A method as claimed in claim 2, wherein the at least one survey parameter comprises offset and interface index.

7. (previously presented) A method as claimed in claim 1 wherein the first parameter is PP travel time.

8. (original) A method as claimed in claim 7 wherein the second parameter is PS travel time.

9. (previously presented) A method as claimed in claim 4, wherein the first parameter is PP travel time and the third parameter comprises reflection depth.

10. (previously presented) A method as claimed in claim 1 wherein the first parameter of the seismic data is reflection depth.

11. (previously presented) A method as claimed in claim 1 and comprising displaying the obtained value of the second parameter.

12. (previously presented) A method as claimed in claim 5, and comprising displaying the obtained value of the third parameter.

13. (previously presented) A method as claimed in claim 11 wherein the displaying step comprises highlighting a portion of a displayed seismic trace.

14. (previously presented) A method as claimed in claim 1 and comprising modifying the at least one look-up table, on the basis of the obtained value of the second parameter.

15. (previously presented) A method as claimed in claim 5 and comprising modifying the at least one look-up table, on the basis of the obtained value of the third parameter.

16. (previously presented) A method as claimed in claim 14, wherein the step of modifying the at least one look-up table, comprises modifying a model for the velocity of propagation of acoustic energy within the earth.

17. (currently amended) A method of processing raw seismic data traces obtained during a seismic survey to match a seismic event in a first set of raw seismic data traces with a seismic event in a second set of raw seismic data traces comprising: determining a first look-up table of a first parameter of raw seismic data traces against at least one survey parameter; ~~and~~ determining a second look-up table of a second parameter of raw seismic data traces against the at least one survey parameter; ~~wherein the method comprises~~ using a predetermined model for the velocity of propagation of seismic energy within the earth in the determination of the first and second look-up tables; and using the raw seismic data traces and the determined first and second look-up tables to match the seismic event in the first set of raw seismic data traces with the seismic event in the second set of raw seismic data traces and thus provide knowledge of one or more subterranean geological structures.

18. (currently amended) An apparatus for processing raw seismic data traces obtained during a seismic survey, comprising: means for identifying ~~the~~ a value of a first parameter associated with ~~an~~ a first event in a set of raw seismic data traces; ~~and~~ means for obtaining, using first and second look-up tables, ~~the~~ a value of a second parameter, the second parameter being associated with ~~another~~ a second event in the set of raw seismic data traces; and means for matching the first event with the second event in the set of raw seismic data traces.

19. (original) An apparatus as claimed in claim 18 and comprising a programmable data processor.

20. (previously presented) The apparatus as claimed in claim 19, wherein the first parameter-identifying means and the second parameter-identifying means are part of a program fixed in a storage medium the program being executable by the data processor.

21. (previously presented) The method as claimed in claim 1, wherein steps (a) and (b) are part of a program fixed in a storage medium, the program being executable by a programmable data processor.

22. (previously presented) The method of claim 1, wherein steps (a) and (b) are part of a program for controlling a computer.